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ABSTRACT

This study was designed to investigate the effects of assistant teachers on the reading, language, mathematics, and spelling achievement of black first and second grades students. The subjects of the study consisted of 167 first and second grade students at East Kemper Elementary in Scooba, Mississippi. The students of the 1982-83 and 1983-84 classes, in which there were no assistant teachers, served as the control group. The 1983-84 and 1984-85 classes, with assistant teachers in the classroom, served as the experimental group. Each group was taught by the same teacher each year. The California Achievement Test, Levels 11 and 12, Form C, was given to the control group in April of 1983 and 1984 and the experimental group in April of 1984 and 1985. Analysis of the differences between the mean test scores of the students in the control group and the experimental group showed that no significant differences existed between the achievement of the two groups in reading comprehension, reading vocabulary, language expression, and mathematics computation for both first and second grade students. However, significant differences existed in the second grade between the achievement of the groups in language mechanics, mathematics concepts and applications, and spelling. (Author)

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THE EFFECTIVENESS OF ASSISTANT TEACHERS AS AN AGENT OF CHANGE
IN THE READING, LANGUAGE, MATHEMATICS, AND SPELLING
ACHIEVEMENT OF BLACK FIRST AND SECOND
GRADE STUDENTS

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Abstract

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Major: Elementary Education, Department of Curriculum and Instruction

Title of Research Study: The Effectiveness of Assistant Teachers as an
Agent of Change in Reading, Language,
Mathematics, and Spelling Achievement of Black
First and Second Grade Students

Directed by: Dr. Jane H. McHaney

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The study was designed to investigate the effects of assistant teachers on the reading, language, mathematics, and spelling achievement of black first and second grade students. The subjects of the study consisted of 167 students enrolled in the first and second grade at East Kemper Elementary in Scooba, Mississippi. The students of the 1982-83 and 1983-84 classes, in which there were no assistant teachers, served as the control group. The 1983-84 and 1984-85 classes, with assistant teachers in the classrooms, served as the experimental group. Each group was taught by the same teacher each year. The California Achievement Test, Levels 11 and 12, Form C, was given to the control group in April of 1983 and 1984 and the experimental group in April of 1984 and 1985. Analysis of the differences between the mean test scores of the students in the control group and the experimental group showed that no significant difference existed between the achievement of the two groups in reading comprehension, reading vocabulary, language

expression, and mathematics computation for both first and second grade students. However, significant differences existed between the achievement of the groups in language mechanics (second grade), mathematics concepts and applications (second grade), and spelling (second grade). Significant differences were considered at the .01 and .05 levels of confidence.

The Effectiveness of Assistant Teachers as an Agent of Change
in the Reading, Language, Mathematics, and Spelling
Achievement of Black First and Second
Grade Students

Introduction

According to Trump and Baynham (1961), "one third of the teaching day goes to clerical and sub-professional tasks" (p. 8). Trump's motto was, "Let clerks and helpers do the mundane and mechanical chores in the classroom and let the teacher teach." It is hard for teachers to meet the daily demands placed on them by the ever increasing number of students placed in their classroom and by the even greater diversity of individual needs of students.

Financial limitations have hindered the addition of paraprofessional staff members to alleviate this problem. Over the past two years, an event has emerged in school districts across the State of Mississippi to help improve this situation without infringing on an already overloaded budget--the use of assistant teachers to help students learn. The Education Reform Act of 1982 requires that assistant teachers be placed in every first, second, and third grade class of the schools in Mississippi by the 1985-86 school year.

The practice of using teacher assistants in one form or another to assist in the instructional process at all levels of education is not new. The first known use of classroom assistants in America occurred with the adoption of the British "Monitorial" system in the early 19th century by several of the religiously motivated, straightlaced "public

school societies," mainly in New England, which were trying to provide free education to the poor. To relieve the teachers' burdens in these one-room rural schools, older students drilled rows of younger pupils in reading and mathematics (Kaplan, 1977).

Trump and Baynham (1961) pointed out that a third of the work teachers do could just as well be done by various kinds of automatic devices. But does the use of teacher assistants cause any significant change in student achievement? Logically and theoretically, the use of teacher assistants should improve achievement.

Literature Review

There are rising expectations throughout the State of Mississippi for the use of teacher assistants in first, second, and third grade classes as a result of the Education Reform Act of 1982. The teacher assistant program is designed to build a strong foundation at the earliest level of public education by helping students master the fundamentals of reading and other basic skills (Breen, Ferguson, & Reeves, 1983). One school district in the state has done some specific evaluation of teacher assistants--Lee County. This evaluation indicates that teacher assistants are instrumental in positively affecting student achievement to a significant degree (Saterfiel & Handley, 1983).

Renaud (1976) describes the results of a three-year study involving the use of paraprofessionals with mathematics students in the La Mesa-Spring Valley School District in California. Over 1200 students in grades four through seven participated in this project to determine what

effects paraprofessional assistants had upon student achievement and attitudes in mathematics. Within the project, students in classrooms which utilized paraprofessionals in mathematics instruction did achieve better in mathematics than students in classrooms without paraprofessionals. The results of a study conducted by Holzmler (1982) showed that volunteer aides enhanced teacher effectiveness and increased student achievement in the areas of reading and grammar on all grade levels.

Barnes (1967) reports, in a study of Georgia's ESEA Title I Program, that reading programs have raised students' achievement levels with the use of teacher aides. The evaluation reports submitted by Title I in Action in Virginia during 1974-75 showed that one of the factors that contributed most toward accomplishing Title I objectives was the use of teacher aides. In the area of reading, participants gained more than four additional months in grade equivalency. The California Achievement Test results indicated that gains were doubled when students participated in the Title I Program (Title I in Action, 1975). In an evaluation of New York City's Title I Educational Projects, 1966-67, Fox and Weinberg (1967) report that striking gains were obtained in both reading and mathematics skills as a result of using high school graduates living in poverty areas as educational aides to assist classroom teachers.

Miller (1970) conducted a study designed to compare the utilization of instructional time of first grade classroom teachers with and without full-time teacher aides. Student achievement was measured by the Lee-

Clark Reading Readiness Test at the end of the school year. No significant difference was found between the two groups, although it seemed that teacher aides were somewhat more successful in improving the achievement of lower level pupils.

Saterfiel and Handley (1983) investigated the effects of a privately funded project that placed reading aides in the first three grades in a rural county of Mississippi and found that the teachers and aides who emphasized small group or individual activities had higher test scores. This five year project led to a state law that has placed reading aides in all the public schools in Mississippi.

Garvey (1983) relates a study of 264 kindergarten students in Cleveland's public schools. Each kindergarten teacher was provided with aides to provide reinforcement for targeted children. Of the 264 students who scored below average on the fall pre-test, 220 scored average or above on the spring post-test.

Emmerling and Chavis's (1966) study of 900 teachers and 2500 primary children engaged in North Carolina's Comprehensive School Improvement Project indicated that the use of teacher aides is a highly successful and beneficial experience. Attention span has been described by Hayden and Murdoch (1969) as the length of time a child actively engages in a tedious and continuous task without extensive encouragement. Additional reinforcement of attention provided by a teacher aide seems to lengthen children's spans of attention, according to Hayden and Murdoch (1969). Research findings on teacher aides and parent involvement in early childhood and elementary school programs show that, with this additional

support, students make significant cognitive gains (Hankerson, 1983).

Nickerson (1972) cites Bergquist's study of the influence teacher aides had on student attitudes and achievement generally. Bergquist examined an experimental group with one aide to every six teachers and a control group with no aides in elementary schools. He found that the experimental and control groups were about equal in achievement and attitude.

Statement of the Problem

The problem in this study was to determine the effects of assistant teachers on the reading, language, mathematics, and spelling achievement of black first and second grade students as compared to first and second grade students who had no assistant teacher.

Hypotheses

The following hypotheses were tested:

1. There will be no significant difference as measured by the California Achievement Test (CAT) in the area of reading achievement of first grade students with and without assistant teachers.
2. There will be no significant difference as measured by the CAT in the area of language achievement of first grade students with and without teacher assistants.
3. There will be no significant difference as measured by the CAT in the area of mathematics achievement of first grade students with and without teacher assistants.
4. There will be no significant difference as measured by the CAT

in the area of reading achievement of second grade students with and without assistant teachers.

5. There will be no significant difference as measured by the CAT in the area of language achievement of second grade students with and without assistant teachers.

6. There will be no significant difference as measured by the CAT in the area of mathematics achievement of second grade students with and without assistant teachers.

7. There will be no significant difference as measured by the CAT in the area of spelling achievement of second grade students with and without assistant teachers.

Assumptions

For the purpose of this study, the following assumptions were made:

1. It is assumed that the evaluative instrument used in the study will measure that which it purports to measure.

2. Each selected group will have an equal number of subjects in each category to use in the study.

3. The subjects are representative first and second graders.

4. The motivation given by teachers is assumed to be uniform in both groups.

Limitations

1. The study was limited to black first and second graders at East Kemper Elementary.

2. The measurement of student achievement was limited to the

California Achievement Test.

Definition of Terms

1. Assistant Teacher: A full-time teacher assistant placed in first and second grade classes as a result of the Education Reform Act of 1982.
2. Reading Achievement: Scores achieved by the children on the reading subtest of the California Achievement Test (CAT), Levels 11 and 12, Form C.
3. Language Achievement: Scores achieved by the children on the language subtest of the CAT, Levels 11 and 12, Form C.
4. Mathematics Achievement: Scores achieved by the children on the mathematics subtest of the CAT, Levels 11 and 12, Form C.
5. First Grade Students: Male or female children who are six years old or above by September 1 of the designated school year.
6. Second Grade Students: Students who successfully completed one year in the first grade the previous year.
7. Significant Difference: For the purpose of this study, a statistically significant difference will be accepted at the .05 and .01 levels of significance.
8. Control Group: The classes that did not have a teacher assistant.
9. Experimental Group: The classes that had full-time teacher assistants.

Research Methodology

This study compared reading, mathematics, language, and spelling achievement of black first and second grade students in three consecutive years where the students were or were not taught with an assistant teacher in the classroom. Since the probability of difference in achievement existed, an analysis of variance statistical model was used to make statistical adjustment for these differences.

Subjects of the Study

This study was conducted in Kemper County during the 1984-85 school year. The ethnic composition of the school was 100 percent Black-American. The majority of the students came from low socio-economic families as measured by participation in the free lunch program.

The sample consisted of 167 first and second grade students at East Kemper Elementary in Scooba, Mississippi. The first and second grade students with full-time teacher assistants during the school years 1983-84 and 1984-85 served as the experimental group. The students of the 1982-83 and 1983-84 school years without teacher assistants served as the control group.

Description of Instrument

The data gathering instrument for this study was the California Achievement Test, Levels 11 and 12, Form C (CAT/C), 1977, which is published by CTB/McGraw-Hill, Del Monte Research Park, Monterey, California.

CAT/C, Level 11, measures achievement in the areas of reading,

language, and mathematics. CAT/C, Level 12, measures achievement in the areas of reading, language, mathematics, and spelling. Tests used in this study were the reading, language, mathematics, and spelling sections of Levels 11 and 12 for both the experimental and control groups. Seven subtest scores were obtained from the CAT/C: Reading vocabulary, reading comprehension, language expression, language mechanics, mathematics computation, mathematics concepts and applications, and spelling.

Data Collecting Procedures

The California Achievement Test was administered to the students in the control group in April of 1983 and 1984 and to the experimental group in April of 1984 and 1985 by the first and second grade teachers at East Kemper Elementary. The CAT/C purports to measure, evaluate, and analyze educational achievement and learning problems in the areas of reading, mathematics, language, and spelling.

The students in both the experimental and the control groups were taught by the same teachers. The experimental group was taught language, reading, mathematics, and spelling with assistant teachers. The control group was taught reading, language, mathematics, and spelling without assistant teachers.

Analysis of Data

The purpose of this study was to investigate the effects of assistant teachers on reading, language, mathematics, and spelling achievement of black first and second-grade students as compared to

first and second grade students who had no assistant teacher.*

The California Achievement Tests were hand scored by one of Kemper County's Chapter 1 Reading Supervisors. All statistical data presented were processed at the Thomas E. Tramel Computer Center at Mississippi State University, Mississippi State, Mississippi.

Analysis of variance was used for data analysis. The dependent variables in the 11 separate analyses conducted were students' scale scores for reading vocabulary, reading comprehension, total reading, spelling, language expression, language mechanics, total language, mathematics computation, mathematics concepts and applications, total math, and total battery as measured by the California Achievement Test, Levels 11 and 12, Form C.

Evaluation of Stated Hypotheses

This section is designed to consider, in numerical order, each of the seven null hypotheses used to structure the study. The seven null hypotheses are now listed and statistical findings are evaluated in terms of each hypothesis. From these evaluations, a decision was made in terms of rejecting or failing to reject the individual hypothesis.

Hypothesis 1: There will be no significant differences between the experimental group (first graders with teacher assistants) and the control group (first graders without teacher assistants) in: (a) reading vocabulary, (b) reading comprehension.

Findings: Analysis of variance applied to mean scores of the experimental and control groups did not produce *F* values greater than or

equal to the critical value of 6.96 (See Table 1).

Decision: Based on the findings, the null hypothesis was not rejected.

Hypothesis 2: There will be no significant differences between the experimental group (first graders with teacher assistants) and the control group (first graders without teacher assistants) in: (a) language expression.

Findings: Analysis of variance applied to mean scores of experimental and control groups did not produce F values greater than or equal to the critical value of 6.96 (See Table 2).

Decision: Based on the findings, the second null hypothesis was not rejected.

Hypothesis 3: There will be no significant differences between the experimental group (first graders with teacher assistants) and the control group (first graders without teacher assistants) in: (a) computation, (b) concepts and applications.

Findings: Analysis of variance applied to mean scores of experimental and control groups did not produce F values greater than or equal to the critical value of 6.96 (See Table 3).

Decision: Based on the findings, the third null hypothesis was not rejected.

Hypothesis 4: There will be no significant differences between the experimental group (second graders with teacher assistants) and the control group (second graders without teacher assistants) in: (a)

Table 1

A Comparison of Reading Achievement of First Grade Students in the Areas of Vocabulary, Comprehension, and Total Reading Taught in Classrooms With and Without Teacher Assistants

Reading Achievement	1983-84 With Teacher Assistants		1982-83 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Vocabulary	52	332.26	34	334.41	.121
Comprehension	52	347.03	34	350.67	.272
Total Reading	52	320.73	34	318.08	.134

*Significant at .01 level (df 1, 84)

F 6.96

**Significant at .05 level (df 1, 84)

F 3.96

Table 2

A Comparison of Language Achievement of First Grade Students in the Area of Language Expression Taught in Classrooms With and Without Teacher Assistants

Language Achievement	1983-84 With Teacher Assistants		1982-83 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Language Expression	52	346.38	34	349.41	.087

*Significant at .01 level (df 1, 84)

F 6.96

**Significant at .05 level (df 1, 84)

F 3.96

Table 3

A Comparison of Mathematics Achievement of First Grade Students in the Areas of Computation and Concepts and Applications Taught in Classrooms With and Without Teacher Assistants

Mathematics Achievement	1983-84 With Teacher Assistants		1982-83 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Mathematics Computation	52	276.40	34	306.08	3.93
Concepts and Applications	52	334.82	34	332.88	0.35
Total Math	52	317.56	34	323.88	0.462

*Significant at .01 level (df 1, 84)

F 6.96

**Significant at .05 level (df 1, 84)

F 3.96

reading vocabulary, (b) reading comprehension.

Findings: Analysis of variance applied to mean scores of experimental and control groups did not produce F values greater than or equal to the critical value of 6.96 (See Table 4).

Decision: Based on the findings, the fourth null hypothesis was not rejected.

Hypothesis 5: There will be no significant differences between the experimental group (second graders with teacher assistants) and the control group (second graders without teacher assistants) in: (a) language mechanics, and (b) language expression.

Findings: Analysis of variance applied to the language mechanics mean scores of the experimental and control groups did produce F values greater than or equal to the critical value of 3.96. Analysis of variance applied to language expression mean scores of experimental and control groups did not produce F values greater than or equal to the critical value of 6.96 (See Table 5).

Decision: Based on the findings, the fifth null hypothesis part (a) was rejected. The fifth null hypothesis part (b) was not rejected.

Hypothesis 6: There will be no significant differences between the experimental group (second graders with teacher assistants) and the control group (second graders without teacher assistants) in: (a) computation, and (b) concepts and application.

Findings: Analysis of variance applied to the computation mean scores of experimental and control groups did not produce F values greater than

Table 4

A Comparison of Reading Achievement of Second Graders in the Areas of Vocabulary, Comprehension, and Total Reading Taught in Classrooms With and Without Teacher Assistants

Reading Achievement	1984-85 With Teacher Assistants		1983-84 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Vocabulary	40	364.50	41	350.34	3.69
Comprehension	40	370.07	41	372.14	0.070
Total Reading	40	345.90	41	343.87	0.090

*Significant at .01 level (df 1, 79)

F 6.96

**Significant at .05 level (df 1, 79)

F 3.96

Table 5

A Comparison of Language Achievement of Second Graders in the Areas of Language Mechanics and Language Expression Taught in Classrooms With and Without Teacher Assistants

Language Achievement	1984-85 With Teacher Assistants		1983-84 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Mechanics	40	423.62	41	401.24	6.88**
Expression	40	389.55	41	386.53	.131
Total Language	40	385.47	41	368.12	3.76

*Significant at .01 level (df 1, 79)

F 6.96

**Significant at .05 level (df 1, 79)

F 3.96

or equal to the critical value of 6.96 (See Table 6). Analysis of variance applied to the concepts and applications mean scores of the experimental and control groups did produce F values greater than the critical value of 6.96 (See Table 6).

Decision: Based on the findings, the sixth null hypothesis part (a) was not rejected. The sixth null hypothesis part (b) was rejected.

Hypothesis 7: There will be no significant differences between the experimental group (second graders with teacher assistants) and the control group (second graders without teacher assistants) in spelling.

Findings: Analysis of variance applied to the spelling mean scores of experimental and control groups did produce F values greater than or equal to the critical value of 3.96 (See Table 7).

Decision: Based on the findings, the seventh null hypothesis was rejected.

Summary

The purpose of this study was to investigate the effects of assistant teachers on the reading, mathematics, language, and spelling achievement of black first and second grade students as compared to black first and second grade students who had no teacher assistant. The subjects were the first and second grade students in the 1982-83, 1983-84, and 1984-85 school years at East Kemper Elementary in Scooba, Mississippi. The population of the study consisted of 167 first and second graders.

Results of analysis of data showed no significant differences in the

Table 6

A Comparison of Mathematics Achievement of Second Graders in the Areas of Computation and Concepts and Applications Taught in Classrooms With and Without Teacher Assistants

Mathematics Achievement	1984-85 With Teacher Assistants		1983-84 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Computation	40	325.97	41	323.36	1.66
Concepts and Applications	40	360.20	41	344.63	7.16* **
Total Math	40	351.91	41	340.41	6.47
*Significant at .01 level (df 1, 79)			F 6.96		
**Significant at .05 level (df 1, 79)			F 3.96		

Table 7

A Comparison of Spelling Achievement of Second Grade Students Taught in Classrooms With and Without Teacher Assistants

Spelling Achievement	1984-85 With Teacher Assistants		1983-84 Without Teacher Assistants		F
	Number	Mean	Number	Mean	
Spelling	40	426.62	41	399.90	4.67**
*Significant at .01 level (df 1, 79)			F 6.96		
**Significant at .05 level (df 1, 79)			F 3.96		

areas of vocabulary, comprehension, and language expression of both first and second grade students. Significant differences were found in language mechanics (second grade), mathematics concepts and applications (second grade), and spelling (second grade). The .01 and .05 levels of confidence were used for determining statistical significance; therefore, the null hypotheses 1, 2, 3, and 4 were not rejected. The null hypotheses 5, 6, and 7 were rejected.

Conclusions

The results of this study appear to justify the following conclusions:

1. Assistant teachers in a regular classroom do not appear to have any effect on the achievement of first and second grade students in reading vocabulary and comprehension.
2. Assistant teachers in a regular classroom do not appear to have any effect on the achievement of first grade students in language expression, mathematics computation and concepts and applications.
3. Assistant teachers in a regular classroom appear to have an effect on the achievement of second grade students in language mechanics, mathematics concepts and applications, and spelling.

Implications

The results of this study supported the findings of Miller (1970) and Nickerson (1972) which showed no significant gains in reading achievement of first and second grade levels. However, this study concurred with the research findings of Renaud (1976), Holzmillier

(1982), and New York's Title I Program (1967) which showed significant gains in mathematics and grammar.

Recommendations

As a result of this study, the following recommendations are offered:

1. Assistant teachers should remain in first and second grade classrooms.
2. Assistant teachers should also be placed in third grade classrooms.
3. A longitudinal study should be conducted comparing the reading, language, mathematics, and spelling achievement of the groups.

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